REMARKS

The applicants respectfully request reconsideration of this application as amended. An RCE accompanies this Amendment.

Claims 1, 3-10, and 12-25 are pending in this application. Claims 2 and 11 have been previously canceled. Claims 1, 3-10, and 12-25 have been rejected.

Claims 1, 9, and 20 have been currently amended.

Applicants reserve all rights with respect to the applicability of the doctrine of equivalents.

Claims 1, 3-10 and 12-25 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The Office Action states that the claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Regarding claims 1, 9, and 20, the Office Action further states that there does not appear to be a written description of the claimed limitation "independent of increasing the window size for the traffic stream" in the application as filed.

Claims 1, 9, and 20 have been amended by deleting the above limitation. Amended claims 9 and 20 each include the limitation "wherein rate limiting the traffic stream acts as a back up to ensure that congestion is avoided between periods of setting the congestion window size." Applicants submit that support for the above limitation can be found throughout the specification including paragraphs [0033], [0038], [0040], and [0043]. Support for claims 9 and 20 can be found specifically in paragraph [0038] which reads as follows.

> The rate limiting function is preferably used in combination with another aspect of the present invention, namely the ability to determine which connections or traffic flows are likely to be uncongested. That is, through the use of the present methods, control nodes (such as proxy 24 in Figure 3) are able to monitor network conditions and determine existing congestion conditions on a per connection, per traffic stream, per IP address or address range, or other basis. By knowing the existing congestion conditions, the control node can make decisions regarding an appropriate initial setting of a congestion window so as to best utilize the available bandwidth of a communication path. Then, from this initial setting, the congestion window can be increased (e.g., using the slow start algorithm), up to the advertised window size of the client. The rate limiting function will ensure that a minimum inter-packet spacing is maintained, thus permitting full use of the capacity of a downstream bottleneck. Alternatively, or in addition, the control node may set the initial congestion window to an optimum size for existing congestion conditions in the network and periodically adjust the connection window size based on updated congestion information. The rate limit feature may then act as a back up to ensure that congestion is avoided between periods of setting the congestion window size. In either case, by allowing for increased initial congestion window sizes on communication paths that are determined to be congestion free (or relatively congestion free), the present invention provides a mechanism for improving fetch time.

(Emphasis Added).

Given that the specification supports the limitation "wherein rate limiting the traffic stream acts as a back up to ensure that congestion is avoided between periods of setting the congestion window size" as recited in amended claims 9 and 20, applicants respectfully submit that claims 9 and 20 contain subject matter which was described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Accordingly, applicants respectfully request withdrawal of the rejection of claims 9 and 20 under 35 U.S.C. § 112, first paragraph.

Independent claim 1 contains similar, but not identical, limitations as compared to the limitations of claims 9 and 20. Support for the limitation "wherein the dynamic bandwidth control is concurrently applied to the traffic stream to ensure that congestion

is not induced by applying predictions of congestions conditions to the traffic stream" as recited in amended claim 1 can be found specifically in paragraph [0040]. For the reasons stated above, applicants respectfully request withdrawal of the rejection of claim 1 under 35 U.S.C. § 112, first paragraph.

Given that dependent claims 3-8, 10, 12-19, and 20-25 depend from and include the limitations of one of the corresponding independent claims 1, 9, and 20, applicants respectfully request withdrawal of the rejection of claims 3-8, 10, 12-19, and 20-25 under 35 U.S.C. § 112, first paragraph.

Claims 1, 3-10, and 12-25 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,757,255 (hereinafter "Aoki") in view of U.S. Patent No. 6,219,713 (hereinafter "Ruutu").

Applicants respectfully submit that claim 1 is not obvious under 35 U.S.C. § 103(a) in view of the combination of Aoki with Ruutu.

Claim 1, as amended, reads as follows.

> A method, comprising:
> applying predictions of congestion conditions for a traffic stream in a communication network to increase an initial congestion window size for the traffic stream up to an advertised window size of a client receiving the traffic stream; and
> applying dynamic bandwidth control to the traffic stream by modulating bandwidths of the traffic stream according to a capacity of a bottleneck in a communication path through which the traffic stream passes in the communication network, wherein the dynamic bandwidth control is concurrently applied to the traffic stream to ensure that congestion is not induced by applying predictions of congestions conditions to the traffic stream.

Aoki discloses a performance calculating unit that calculates an effective bandwidth based from the average value of the intermediate value of the round trip

times and from a value of the maximum congestion window size. (Aoki, Col. 11, lines 33-37). Aoki discloses how the bandwidth can be calculated when the congestion window size is reduced by half in response to an acknowledgement packet not arriving within a predetermined period. (Aoki, Figure 5). Thus, Aoki discloses calculating bandwidth dependent upon a single control feature, window sizing.

By contrast, Aoki does not disclose or suggest applying dynamic bandwidth control to the traffic stream by modulating bandwidths of the traffic stream because Aoki merely discloses calculating, not modulating, the effective bandwidth. Aoki does not disclose or suggest two separate control features for avoiding congestion. Furthermore, Aoki does not disclose or suggest the limitation "applying dynamic bandwidth control to the traffic stream by modulating bandwidths of the traffic stream according to a capacity of a bottleneck in a communication path through which the traffic stream passes in the communication network, wherein the dynamic bandwidth control is concurrently applied to the traffic stream to ensure that congestion is not induced by applying predictions of congestions conditions to the traffic stream" as recited in claim 1. Also, the Office Action states that Aoki fails to teach that the initial congestion window is increased up to an advertised window size of a client receiving the traffic stream. (See Office Action, 01/12/06, p. 2). Therefore, Aoki does not disclose or suggest the limitations stated in claim 1 and, in fact, teaches away from the limitations stated in claim 1.

Ruutu discloses a method and apparatus for adjusting a TCP sliding window using information regarding network conditions. In particular, the "source 330 is supposed to adjust its sliding window according to this advertisement, unless the

congestion window 360 maintained by the source 330 is smaller" (Ruutu, Col.4, lines 63-65; emphasis added). Indeed, Ruutu claims that the "size of the sliding window comprises the minimum of the window advertisement and a congestion window" (Ruutu, Claim 2). Ruutu discloses that either 1) the sliding window size is set equal to the advertising window size or 2) the sliding window size is set equal to the congestion window size. (see Ruutu, Col. 5, Ln. 10).

By contrast, Ruutu does not disclose or suggest "applying predictions of congestion conditions for a traffic stream in a communication network to increase an initial congestion window size for the traffic stream up to an advertised window size of a client receiving the traffic stream." (claim 1; emphasis added). Ruutu does not disclose or suggest two separate control features for avoiding congestion. Furthermore, Ruutu does not disclose or suggest "applying dynamic bandwidth control to the traffic stream by modulating bandwidths of the traffic stream according to a capacity of a bottleneck in a communication path through which the traffic stream passes in the communication network, wherein the dynamic bandwidth control is concurrently applied to the traffic stream to ensure that congestion is not induced by applying predictions of congestions conditions to the traffic stream" as recited in claim 1 because Ruutu merely discloses changing bandwidth based upon adjusting a TCP sliding window. Therefore, Ruutu does not disclose or suggest the limitations stated in claim 1 and, in fact, teaches away from the limitations stated in claim 1, as amended.

It is also respectfully submitted that Aoki does not suggest a combination with Ruutu, and Ruutu does not suggest a combination with Aoki which teaches away from Ruutu. Aoki discloses a TCP communications performance measuring device while

Ruutu discloses adjustment of a TCP sliding window based upon information about network conditions. It would be impermissible hindsight to combine Aoki with Ruutu based on applicants' own disclosure.

Furthermore, even if Aoki and Ruutu were combined, such a combination would lack the following limitations of claim 1, as amended:

> applying predictions of congestion conditions for a traffic stream in a communication network to increase an initial congestion window size for the traffic stream up to an advertised window size of a client receiving the traffic stream; and
>
> applying dynamic bandwidth control to the traffic stream by modulating bandwidths of the traffic stream according to a capacity of a bottleneck in a communication path through which the traffic stream passes in the communication network, wherein the dynamic bandwidth control is concurrently applied to the traffic stream to ensure that congestion is not induced by applying predictions of congestions conditions to the traffic stream.

(claim 1).

Therefore, in view of the above distinction, neither Aoki nor Ruutu, individually or in combination, disclose each and every limitation of claim 1. As such, claim 1, as amended, is not rendered obvious by Aoki in view of Ruutu under 35 U.S.C. § 103(a).

Given that claims 3-8 depend from and include the limitations of claim 1, applicants submit that claims 3-8 are not obvious in view of Aoki and Ruutu.

Independent claim 9, as amended, includes the limitation "setting an initial congestion window for a traffic stream in a communication network according to predicted congestion conditions for that traffic stream, increased up to an advertised window size of a client receiving the traffic stream." (claim 9). Independent claim 9 also includes the limitation "rate limiting the traffic stream to an effective bandwidth associated with a potentially congested bottleneck in a communication path over which

the traffic stream is transmitted, wherein rate limiting the traffic stream acts as a back up to ensure that congestion is avoided between periods of setting the congestion window size." (claim 9; emphasis added).

Therefore, in view of the above distinction, neither Aoki nor Ruutu, individually or in combination, disclose each and every limitation of claim 9. As such, claim 9 is not rendered obvious by Aoki in view of Ruutu under 35 U.S.C. § 103(a).

Given that claims 10 and 12-19 depend from and include the limitations of claim 9, applicants submit that claims 10 and 12-19 are not obvious in view Aoki and Ruutu.

Independent claim 20, as amended, includes the limitation "… to set an initial congestion window for a traffic stream transmitted over the at least one communication path according to predicted congestion conditions for that traffic stream, increased up to an advertised window size of a client receiving the traffic stream." (claim 20). Independent claim 20 also includes the limitation "to rate limit the traffic stream to an effective bandwidth associated with a potentially congested bottleneck in the at least one communication path over which the traffic stream is transmitted, wherein rate limiting the traffic stream acts as a back up to ensure that congestion is avoided between periods of setting the congestion window size." (claim 20; emphasis added).

Therefore, in view of the above distinction, neither Aoki nor Ruutu, individually or in combination, disclose each and every limitation of claim 20. As such, claim 20 is not rendered obvious by Aoki in view of Ruutu under 35 U.S.C. § 103(a).

Given that claims 21-25 depend from and include the limitations of claim 20, applicants submit that claims 21-25 are not obvious in view Aoki and Ruutu.

CONCLUSION

In view of the foregoing amendments and remarks, applicants respectfully submit that all of the rejections have been overcome.

If there are any additional charges, please charge Deposit Account No. 02-2666.

Respectfully submitted,

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